

**LOCAL DISTRIBUTION OF INTRODUCED SPECIES ALONG CERTAIN  
ROADSIDES IN THE VICINITY OF DOUGLAS LAKE, 1944**

*Chubbagan Co. Mich.*

by

**Ina Ganson, Pauline Sauer, and Richard Sell**

This study was made under the supervision of  
Dr. F. C. Gates at the University of Michigan  
Biological Station during the summer of 1944.





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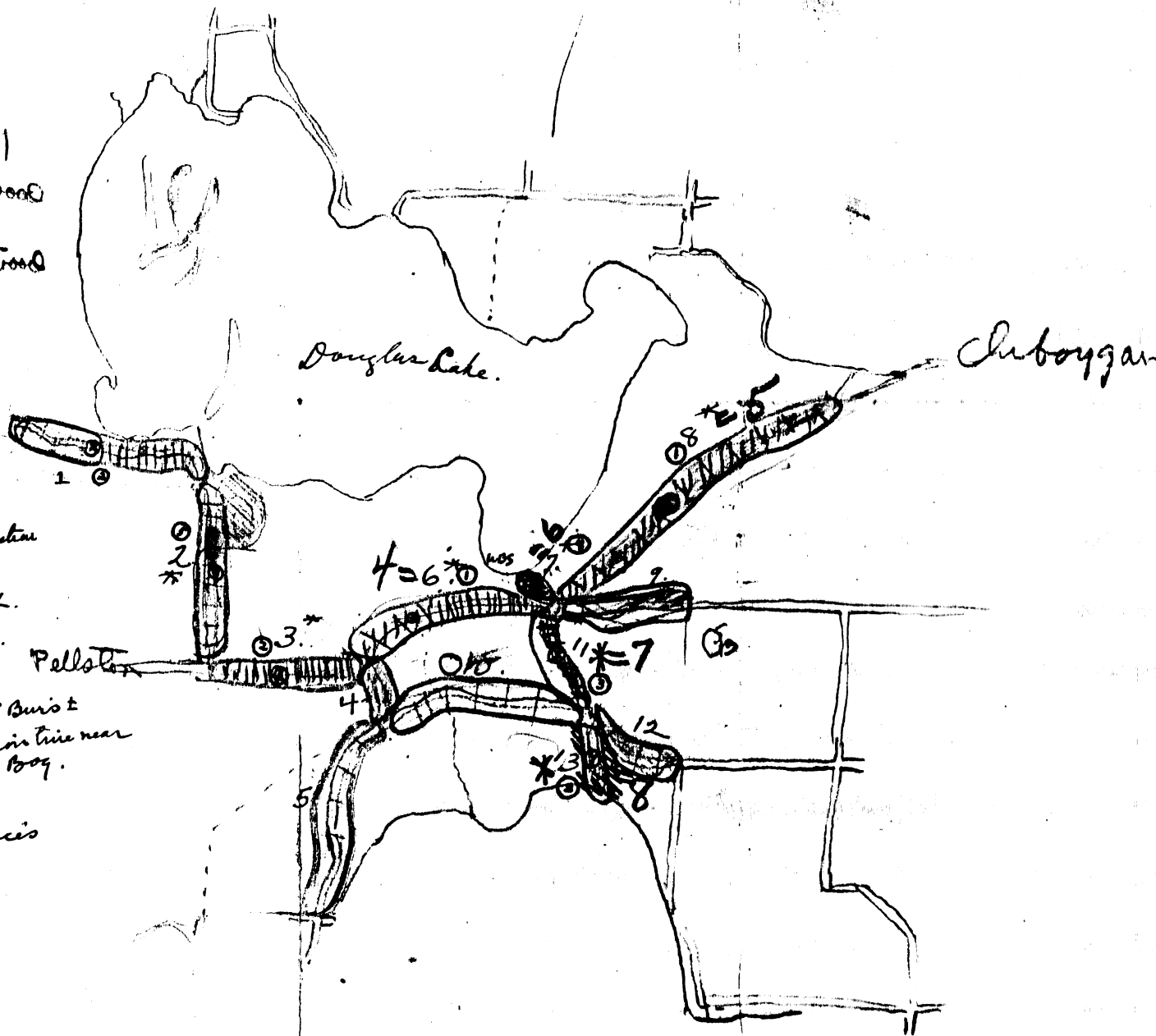
Ganson, Ina

Mittler, Naomi

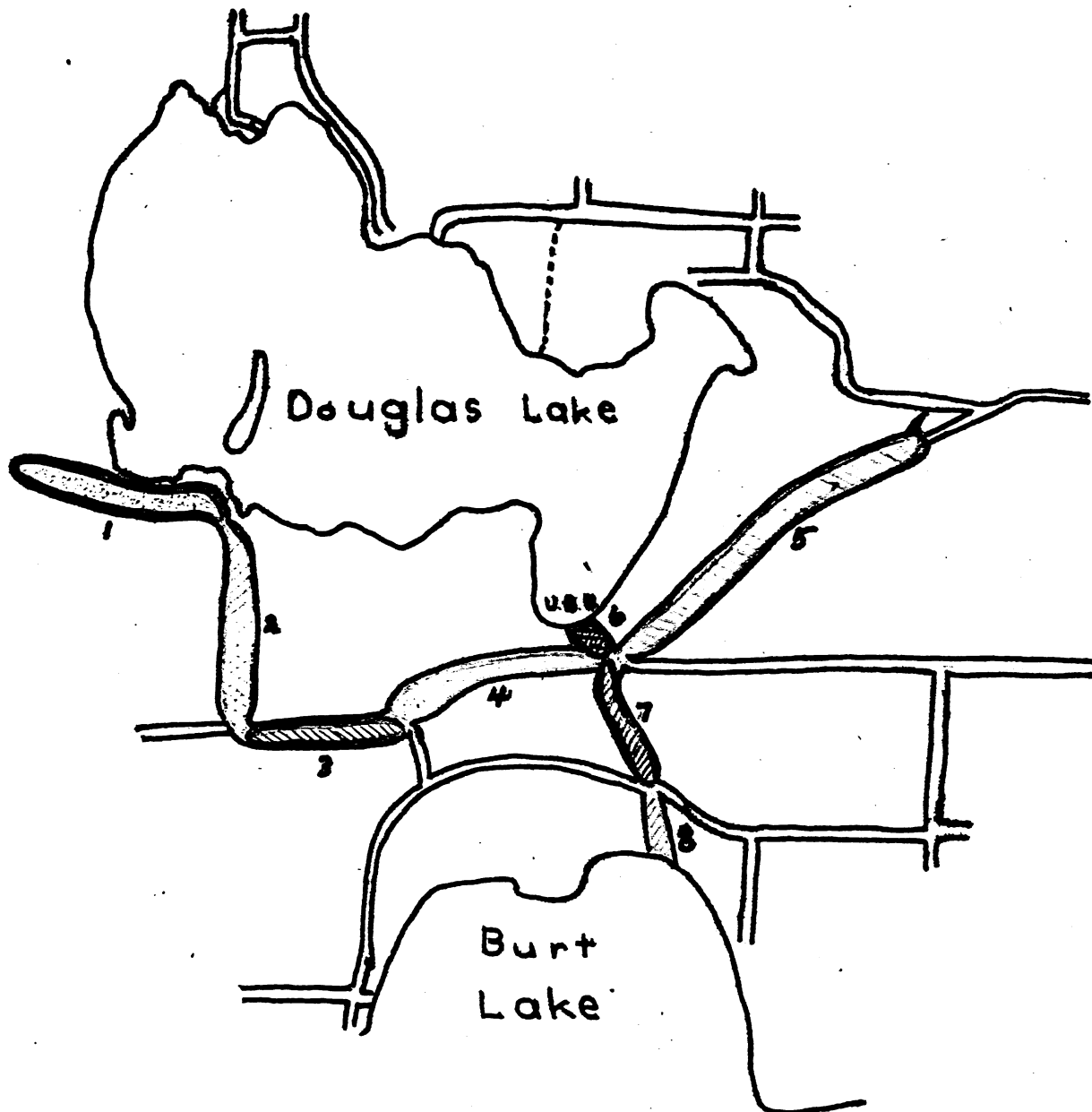
Sell, R. N.

Sauer

-  sunny
-  bog wet shady
-  more or less aspen + hardwood sunny
-  shady aspen + hardwood



- US 51  
Pellston
- 1. County line to Bryant's
- \* 2. Bryant's to Pellston Rd
- \* 3. Pellston Rd. Bryant intersection to Burt Lake ..
- 4. Burt L. Rd. Pellston intersection to Hogback intersection
- 5. Burt L. Rd. Hogback intersection to 1st rd running into B.L.
- \* 6. Cheboygan Rd. Burt L. intersection to UB.
- \* 7. UB spur.
- \* 8. Cheboygan Rd. UB intersects to about Burt's
- 9. Mullet Lake Rd. UB. " to section line near Smith's bog.
- 10. Hogback Rd.
- \* 11. Tapanabee Rd. UB intersects to Reccie's
- 12. " " Reccie's to 5 turn
- \* 13. Reccie's Rd.



#### AREAS STUDIED

1. County line to Bryant's; July 21
2. Bryant's to Pellston Road; July 21
3. Pellston Road: Bryant's intersection to Burt Lake Road intersection; July 21
4. Pellston Road: Burt Lake Road intersection to UBS intersection; June 30, July 28
5. Cheboygan Road: UBS intersection to end of pine woods; July 14, August 8
6. UBS spur; July 7, August 4
7. Topinabee Road: UBS intersection to Reese's; July 7, August 4
8. Reese's Road; July 7, August 4

LOCAL DISTRIBUTION OF INTRODUCED SPECIES ALONG CERTAIN  
ROADSIDES IN THE VICINITY OF DOUGLAS LAKE, 1944

Previous to our work three similar studies were made under Dr. Gate's direction. Surveys of introduced vegetation were made in 1914 by Gleason and McFarland and again in the same areas in 1918 by Gleason, and these reports showed that the number of introduced species steadily decreased with the increased distance from civilization, that introduced species were in many cases dependent upon human aid for dispersal, and were unable to compete successfully with the native vegetation. During the years following these reports auto traffic replaced that of horse-drawn vehicles and there was increased settlement in the vicinity. To determine the effect of these changes upon introduced vegetation Coburn and Dean made a similar study in 1928. Their findings record a decrease in the number of introduced species along the roadsides thru aspen growth, but an increase of introduced species in inhabited areas.

The purpose of our study was the survey of certain road areas to determine the distribution and relative abundance of the introduced species. We have accepted Gray's Manual and Hitchcock's Manual of Grasses as our authorities and have used the numerals 1 - 5 to indicate in each area the relative abundance with 1 indicating rare; 2, scarce; 3, common; 4, very common; and 5, abundant.

## AREA 1

The study of this road begins at the Cheboygan-Emmett county line near the southwestern part of Douglas Lake. The road extends for a short distance beyond this thru a patch of *Rubus strigosus* and then thru rather rich woodlands. It finally leads thru a settled resort area at Bryant's and ends near Bryant's Bog.

In the several sunny sections the native vegetation consists largely of *Rubus strigosus*, *Rhus glabra borealis*, *Pteris aquilina*, *Asclepias syriaca*, and *Oenothera* sp., while along the borders of the woods we find abundant *Aralia nudicaulis* and *Diervilla lonicera*. In the vicinity of the cottages the trees are larger and there is less undergrowth. Here we find a slight increase in the number of introduced species along the roadside. In this area we find the following:

## 26 Introduced Species

2-Agrostis capillaris	2-Phleum pratense
2-Agropyron repens	3-Poa compressa
1-Chenopodium album	2-Polygonum convolvulus
2-Chrysanthemum leucanthemum	2-Potentilla intermedia
2-Cirsium arvense	2-Potentilla recta
1-Daucus carota	2-Rumex acetosella
5-Hieracium aurantiacum	2-Rumex crispus
3-Hypericum perforatum	1-Taraxacum vulgare
1-Lychnis alba	1-Tragopogon pratensis
2-Medicago lupulina	2-Trifolium hybridum
3-Medicago sativa	2-Trifolium pratense
4-Melilotus alba	2-Verbascum thapsus
1-Melilotus officinalis	1-Vicia villosa

## AREA 2

This little travelled road is continuous with that of Area 1 but is markedly different from it. It turns south from Bryant's Bog extending to the Cheboygan-Pellston Road thru a sandy clearing about fifty feet wide between aspen woods. This is the sandiest, sunniest, and most barren area studied. Here the native vegetation consists largely of *Rhus glabra borealis*, *Aralia hispida*, and *Rubus allegheniensis*. Scattered among these are the following:

## 15 Introduced Species

5-Agropyron repens	2-Potentilla recta
3-Chenopodium album	2-Rumex acetosella
2-Chrysanthemum leucanthemum	2-Rumex crispus
1-Galeopsis tetrahit	2-Setaria viridis
3-Hieracium aurantiacum	2-Trifolium pratense
4-Hypericum perforatum	2-Verbascum thapsus
2-Melilotus alba	2-Vicia villosa
2-Plantago major	

## AREA 3

This is a part of the Cheboygan-Pellston Road and is therefore more frequently travelled. It touches the south end of Area 2 and joins Area 4 to the east. While the predominant woodland is aspen there is an increased scattering of hardwoods to the east, particularly on the south side of the road. Prominent among the native plants here are *Rhus glabra borealis*, *Pteris aquilina*, *Convolvulus spithameus*, *Asclepias syriaca*, and *Diervilla lonicera*. Among them we find these:

## 26 Introduced Species

3-Agropyron repens	2-Phleum pratense
1-Arctium minus	1-Plantago major
1-Centaurea maculosa	4-Poa compressa
3-Chenopodium album	3-Polygonum convolvulus
3-Chrysanthemum leucanthemum	2-Potentilla recta
2-Cirsium arvense	2-Saponaria officinalis
1-Dactylis glomerata	2-Sisymbrium altissimum
3-Hieracium aurantiacum	1-Taraxacum vulgare
3-Hypericum perforatum	1-Tragopogon pratensis
1-Ichnis alba	2-Trifolium hybridum
2-Medicago sativa	3-Trifolium pratense
3-Melilotus alba	2-Verbascum thapsus
1-Melilotus officinalis	1-Vicia villosa

## AREA 4

This area, also a part of the Cheboygan-Pellston Road, extends between its junction with the Burt Lake Road to the west and our camp entrance to the east. It is continuous with Area 3 and bears great similarity to it excepting that there are more and larger hardwoods as the road extends to the east. The Burt Lake Road doubtless brings more traffic to this section. The native vegetation consists largely of *Agrostis alba*, *Poa pratensis*, *Vaccinium pennsylvanicum* and *canadense*, *Pteris aquilina*, *Diervilla lonicera*, *Rhus glabra borealis*, *Solidago* sp., and *Erigeron ramosus*. Among them we find the following:

## 28 Introduced Species

3-Agropyron repens	3-Poa compressa
1-Arctium minus	3-Polygonum convolvulus
1-Centaurea maculosa	2-Rumex acetosella
3-Chenopodium album	2-Rumex crispus
3-Chrysanthemum leucanthemum	1-Saponaria officinalis
1-Cichorium intybus	2-Setaria viridis
2-Cirsium arvense	1-Taraxacum vulgare
4-Hieracium aurantiacum	1-Tragopogon pratensis
3-Hypericum perforatum	1-Trifolium agrarium
2-Ichnis alba	2-Trifolium hybridum
3-Medicago sativa	4-Trifolium pratense
5-Melilotus alba	(1 albino plant)
1-Melilotus officinalis	2-Verbascum thapsus
1-Nepeta cataria	1-Vicia villosa
3-Phleum pratense	

## AREA 5

This area is also a part of the Cheboygan-Pellston Road, joining Area 4 on the west and extending from the entrance of the Biological Station to the edge of the woods just west of Riggs Corners. It is largely a road thru the aspens. The road clearing is quite wide, having a sunny, sandy bank on the north side. Toward the extreme eastern end of the area the aspens give way to hardwoods although there are several open spots with no trees close to the road. In this area the most abundant native vegetation is *Poa pratensis*, *Rhus glabra borealis*, *Rubus strigosus* and *allegheniensis*, *Pteris aquilina*, *Diervilla lonicera*, and *Convolvulus spithameus*. Among these are the following:

## 28 Introduced Species

4-Agropyron repens	2-Melilotus officinale
1-Bromus inermis	2-Phleum pratense
1-Centaurea maculosa	1-Plantago lanceolata
3-Chenopodium album	5-Poa compressa
2-Chrysanthemum leucanthemum	3-Polygonum convolvulus
1-Cirsium arvense	2-Potentilla recta
2-Daucus carota	2-Rumex acetosella
5-Hieracium aurantiacum	4-Setaria viridis
2-Hieracium pratense	2-Taraxacum vulgare
4-Hypericum perforatum	3-Tragopogon pratensis
2-Lychnis alba	1-Trifolium hybridum
2-Medicago lupulina	2-Trifolium pratense
2-Medicago sativa	3-Verbascum thapsus
5-Melilotus alba	1-Vicia villosa

## AREA 6

This road is the entrance into the Biological Station from the Cheboygan-Pellston Road. It is a short area through the aspens with considerable hardwood and pine



growth near camp. The native vegetation along this road consists largely of *Agrostis alba*, *Pea pratensis*, *Pteris aquilina*, and *Diervilla lonicera*. Here we find the following:

#### 20 Introduced Species

2- <i>Agropyron repens</i>	2- <i>Phleum pratense</i>
2- <i>Arenaria serpyllifolia</i>	3- <i>Poa compressa</i>
1- <i>Cirsium lanceolatum</i>	2- <i>Polygonum convolvulus</i>
3- <i>Echium vulgare</i>	1- <i>Potentilla recta</i>
3- <i>Hieracium aurantiacum</i>	1- <i>Rumex crispus</i>
2- <i>Hypericum perforatum</i>	1- <i>Rumex elongatus</i>
1- <i>Lychnis alba</i>	1- <i>Saponaria officinalis</i>
4- <i>Medicago lupulina</i>	2- <i>Setaria viridis</i>
5- <i>Melilotus alba</i>	2- <i>Trifolium pratense</i>
1- <i>Nepeta cataria</i>	1- <i>Verbascum thapsus</i>

#### AREA 7

Area 7 is a part of the Topinabee Road, an extension of Area 6, from the Cheboygan-Pellston Road to Reese's Road. It is little travelled and runs through a very sandy area which is largely aspen growth with a ground covering of such native plants as *Pteris aquilina* with spots of *Agrostis alba*, *Vaccinium pennsylvanicum*, *Gaylussacia baccata*, *Lepidium virginicum*, and *Erigeron canadensis*. Following are the:

#### 22 Introduced Species

2- <i>Agropyron repens</i>	2- <i>Phleum pratense</i>
2- <i>Chenopodium album</i>	2- <i>Plantago major</i>
2- <i>Chrysanthemum leucanthemum</i>	5- <i>Poa compressa</i>
2- <i>Daucus carota</i>	3- <i>Polygonum convolvulus</i>
2- <i>Hieracium aurantiacum</i>	1- <i>Potentilla recta</i>
1- <i>Hieracium pratense</i>	3- <i>Setaria viridis</i>
2- <i>Hypericum perforatum</i>	1- <i>Taraxacum vulgare</i>
1- <i>Lychnis alba</i>	1- <i>Tragopogon pratensis</i>
2- <i>Medicago lupulina</i>	1- <i>Trifolium agrarium</i>
4- <i>Melilotus alba</i>	2- <i>Trifolium pratense</i>
1- <i>Melilotus officinale</i>	2- <i>Verbascum thapsus</i>

## AREA 8

This is Reese's Road, a continuation of Area 7, from the Topinabee Road to Burt Lake through Reese's Bog. The bog forest is made up largely of *Thuja occidentalis*, *Abies balsamea*, and *Picea canadensis*. This area is the dampest of those studied and we find several native bog plants extending well up to the roadway, - i.e., *Linnaea borealis*, *Equisetum* sp., and *Clintonia borealis*. There are both *Aralia nudicaulis* and *racemosa* here. In this area we find the following:

## 23 Introduced Species

2-Agropyron repens	2-Phleum pratense
2-Chenopodium album	2-Plantago lanceolata
2-Chrysanthemum leucanthemum	2-Poa compressa
2-Cirsium arvense	1-Ribes nigrum
1-Cirsium lanceolatum	2-Setaria viridis
2-Daucus carota	2-Taraxacum vulgare
3-Hieracium aurantiacum	1-Tragopogon pratensis
2-Hypericum perforatum	1-Trifolium agrarium
1-Lychnis alba	2-Trifolium hybridum
3-Medicago lupulina	2-Trifolium pratense
2-Medicago sativa	1-Verbascum thapsus
	1-Vicia villosa

## OCCURRENCE OF INTRODUCED SPECIES

Area	Number of Introduced Species
1	26
2	15
3	26
4	28
5	28
6	20
7	22
8	23

## 45 Introduced Species in Areas Studied

	Areas							
	1	2	3	4	5	6	7	8
<i>Agropyron repens</i>	2	5	3	3	4	2	2	2
<i>Agrostis capillaris</i>	2							
<i>Arctium minus</i>			1	1				
<i>Arenaria serpyllifolia</i>						2		
<i>Bromus inermis</i>					1			
<i>Centaurea maculosa</i>			1	1	1			
<i>Chenopodium album</i>	1	3	3	3	3		2	2
<i>Chrysanthemum leucanthemum</i>	2	2	3	3	2		2	2
<i>Cichorium intybus</i>				1				
<i>Cirsium arvense</i>	2		2	2	1			2
<i>Cirsium lanceolatum</i>						1		1
<i>Dactylis glomerata</i>			1					
<i>Daucus carota</i>	1				2		2	2
<i>Echium vulgare</i>						3		
<i>Galeopsis tetrahit</i>		1						
<i>Hieracium aurantiacum</i>	5	3	3	4	5	3	2	3
<i>Hieracium pratense</i>					2		1	
<i>Hypericum perforatum</i>	3	4	3	3	4	2	2	2
<i>Lychnis alba</i>	1		1	2	2	1	1	1
<i>Medicago lupulina</i>	2				2	4	2	3
<i>Medicago sativa</i>	3		2	3	2			2
<i>Melilotus alba</i>	4	2	5	5	5	5	4	
<i>Melilotus officinalis</i>	1		1	1	2		1	
<i>Nepeta cataria</i>				1		1		
<i>Phleum pratense</i>	2		2	3	2	2	2	2

	Area							
	1	2	3	4	5	6	7	8
Plantago lanceolata					1			2
Plantago major		2	1				2	
Poa compressa	3		4	3	5	3	5	2
Polygonum convolvulus	2		3	3	3	2	3	
Potentilla intermedia <i>monsp. laevis</i>	2							
Potentilla recta	2	2	2		2	1	1	
Ribes nigrum								1
Rumex acetosella	2	2		2	2			
Rumex crispus	2	2		2		1		
Rumex elongatus						1		
Saponaria officinalis			2	1		1		
Setaria viridis		2		2	4	2	3	2
Sisymbrium altissimum			2					
Taraxacum vulgare	1		1	1	2		1	2
Tragopogon pratensis	1		1	1	3		1	1
Trifolium agrarium				1			1	1
Trifolium hybridum	2		2	2	1			2
Trifolium pratense	2	2	3	4	2	2	2	2
Verbascum thapsus	2	2	2	2	3	1	2	1
Vicia villosa	1	2	1	1	1			1

## COMPARISONS OF AREAS STUDIED WITH THOSE OF FORMER REPORTS

In 1914 Gleason and McFarland made a study of the introduced species along a road through the hardwoods from Bryant's Hotel westward into Pellston. This woods had been lumbered in the winters of 1912-'13. Our Area 1 extends through the hardwoods to the eastward from Bryant's Hotel in a comparable area. In 1914 twenty-nine introduced species were found by Gleason and McFarland. Of these we have considered five species as native according to Gray. Of their twenty-nine plants seventeen were found by us as follows: (\* considered as native by us)

* <i>Achillea millefolium</i>	* <i>Polygonum aviculare</i>
<i>Agropyron repens</i>	<i>Polygonum convolvulus</i>
<i>Chenopodium album</i>	<i>Rumex acetosella</i>
<i>Chrysanthemum leucanthemum</i>	<i>Taraxacum vulgare</i>
<i>Cirsium arvense</i>	<i>Trifolium hybridum</i>
* <i>Lepidium virginicum</i>	<i>Trifolium pratense</i>
<i>Phleum pratense</i>	* <i>Trifolium repens</i>
<i>Poa compressa</i>	<i>Verbascum thapsus</i>
* <i>Poa pratensis</i>	

The following eleven plants appear on their list but not on ours:

<i>Cerastium vulgatum</i>	<i>Rumex elongatus</i>
<i>Cirsium lanceolatum</i>	<i>Sfcale cereale</i>
<i>Lappula deflexa</i>	<i>Silene noctiflora</i>
<i>Nepeta cataria</i>	<i>Sisymbrium altissimum</i>
<i>Plantago major</i>	<i>Solanum nigrum</i>
<i>Polygonum persicaria</i>	

The following fourteen introduced species are on our list but not on theirs:

<i>Agrostis capillaris</i>	<i>Melilotus alba</i>
<i>Daucus carota</i>	<i>Melilotus officinalis</i>
<i>Hieracium aurantiacum</i>	<i>Potentilla intermedia</i> <i>manifolia</i>
<i>Hypericum perforatum</i>	<i>Potentilla recta</i>
<i>Lychnis alba</i>	<i>Rumex crispus</i>
<i>Medicago lupulina</i>	<i>Tragopogon pratensis</i>
<i>Medicago sativa</i>	<i>Vicia villosa</i>

While Gleason and McFarland studied the roads through the aspens with the special purpose of determining the amount of migration of introduced plants from roads into the aspen growth, our study kept to the roadsides. Their 100 places chosen at random along roads through the aspen woods where a strip of two meters width was studied yielded eighteen introduced species. Areas 2 and 7 of our study might best represent a comparable area through the aspens. The following plants were found in the Gleason and McFarland list as in the aspen area and appeared in both Area 2 and Area 7 which we studied:

(\*plants which we considered native)

*Achillea millefolium	Chrysanthemum leucanthemum
Agropyron repens	*Polygonum aviculare
*Agrostis alba	Trifolium pratense
	Verbascum thapsus

Seven plants which they found were found in one or the other of our areas:

*Lepidium virginicum	Rumex acetosella
Phleum pratense	Taraxacum vulgare
Poa compressa	*Trifolium repens
* Poa pratensis	

Four plants which they found in 1914 were not found by us in either of these areas:

Avena sativa	Dactylis glomerata
Cerastium vulgatum	Trifolium hybridum

Eighteen plants were found by us along the aspen roads which were not listed by them in the aspen areas:

Chenopodium album	Melilotus officinalis
Daucus carota	Plantago major
Galeopsis tetrahit	Polygonum convolvulus
Hieracium aurantiacum	Potentilla recta
Hieracium pratense	Rumex crispus
Hypericum perforatum	Setaria viridis
Lychnis alba	Tragopogon pratensis
Medicago lupulina	Trifolium agrarium
Melilotus alba	Vicia villosa

## CONCLUSIONS

The conclusion of Gleason and McFarland that introduced species are dependent upon human travel for dispersal of seeds seems to be borne out by our study. The three areas with the greatest number of introduced species are the areas along the Cheboygan-Pellston Road which are the most travelled roads. The area having the next largest number of introduced species is the area in the hardwoods and the resort at Bryant's.

We found seven plants which were in all the areas and were common or more abundant in at least four of the road areas studied:

Agropyron repens	Melilotus alba
Chenopodium album	Poa compressa
Hieracium aurantiacum	Polygonum convolvulus
Hypericum perforatum	

These plants seem to be adaptable to a wide range of conditions, which helps to explain their success in establishing themselves as roadside plants throughout these areas.



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